

Figures 3.3-14 through 3.3-18 show that the annual mean of criteria pollutants in the border region has remained fairly constant from 1992 through 2001. The only pronounced exception is a recent peaking of PM<sub>10</sub> levels in 2000 through 2001 at the Calexico East border crossing, possibly due to increased traffic activity. Figures 3.3-19 through 3.3-23 display the same data as Figures 3.3-14 through 3.3-18, but by monitoring station. As these figures indicate, the annual means of O<sub>3</sub>, SO<sub>2</sub>, and PM<sub>10</sub> remain much the same across the border region. However, there also appears to be a regional gradient of annual means of CO (Figure 3.3-19) and NO<sub>2</sub> (Figure 3.3-20); the highest levels are in Mexicali. This gradient may be associated with the large amount of vehicular activity in Mexicali, compared with the more rural Imperial County to the north. The annual means of CO and NO<sub>2</sub> are also highly correlated regionally, as can be observed from a side-by-side comparison of Figures 3.3-19 and 3.3-20.

The nearest Class I area to the proposed action is the Agua Tibia Wilderness located in the Cleveland National Forest, about 85 mi (137 km) to the northwest. The next nearest Class I area is the Joshua Tree National Park, nestled in the foothills of southeastern California's Mojave Desert, about 100 mi (177 km) to the north.

Ambient air concentration measurements of VOC or hydrocarbons are not recorded in Imperial County at the seven air quality monitoring sites operated either by ARB or the Imperial County Air Pollution Control District. In addition, no VOC measurement data were available for the Mexicali area as such. Thus, no VOC air concentration data are presented here. In Section 4.3, where the impacts of VOC in local O<sub>3</sub> formation data are discussed, emission inventory information for organic gases for Imperial County and hydrocarbons for Mexicali are used.

#### **Class I Areas**

Class I areas are areas of special national or regional natural, scenic, recreational, or historic value for which EPA Prevention of Significant Deterioration regulations provide special protection. For each proposed major new source or major modification that may affect a Class I area, the applicant is responsible for identifying all Class I areas within 62 mi (100 km) of the proposed source and any other Class I areas potentially affected. The proposed action does not comprise a major modification, nor is it located within 62 mi (100 km) of a Class I area.

Ambient air concentration measurements of NH<sub>3</sub> are not recorded in Imperial County at the seven air quality monitoring sites operated either by ARB or the Imperial County Air Pollution Control District. In addition, no NH<sub>3</sub> measurement data were found for the Mexicali area. Thus, no NH<sub>3</sub> air concentration data are presented here. In Section 4.3, where NH<sub>3</sub> impacts are discussed, NH<sub>3</sub> emission inventory information for the San Joaquin Valley is described. No local NH<sub>3</sub> emission inventory data were found.

### **3.4 BIOLOGICAL RESOURCES**

This section describes the biological resources within the United States that could be affected by the proposed action and alternatives. These resources include habitats and organisms that occur in the vicinity of the proposed transmission line routes and the IV Substation, aquatic

and riparian habitats and organisms that occur within and immediately adjacent to the New River, and habitats and organisms at the Salton Sea.

### 3.4.1 Transmission Line Routes and Imperial Valley Substation

#### 3.4.1.1 Vegetation Communities

The description of biological communities present within the vicinity of the proposed transmission lines and IV Substation is primarily based on biological surveys (Loeffler 2001) conducted in the vicinity of the routes for the proposed transmission lines in September and October of 2000. The surveys were conducted in a study area that was 2,150 ft (655 m) wide, centered on the existing IV-La Rosita transmission line, and that ran from the Mexico border to an area north and east of the IV Substation (Figure 3.4-1). A wetland delineation (Hodge 2001) was also performed for the same area.

Two distinctive vegetation communities, Sonoran creosote bush scrub and desert dry wash woodland, are present on the Federal land that would be traversed by the proposed transmission line routes and the two alternative routes, and in the vicinity of the IV Substation (Figure 3.4-1). Of the approximately 1,464 acres (592 ha) encompassed in the survey corridor, about 1,218 acres (493 ha) (83%) are Sonoran creosote bush scrub and about 204 acres (87 ha) (14%) are desert dry wash woodland. The remaining 42 acres (17 ha) (3%) are either covered by the State Route 98 roadway (5 acres) (2 ha) or by the IV Substation (37 acres) (15 ha). A small portion of the proposed transmission line routes is covered by a network of unpaved access roads for the existing line.

Sonoran creosote bush scrub is an open, relatively sparse plant community dominated by creosote bush (*Larrea tridentata*). Burro-weed (*Ambrosia dumosa*) and two species of saltbush (*Atriplex* spp.) are also common. Tree species such as ironwood (*Olneya tesota*), velvet mesquite (*Prosopis velutina*), and catclaw acacia (*Acacia greggii*) are interspersed throughout the community, especially in the southern half of the proposed routes in the United States.

The desert dry wash woodland plant community occurs in three areas of the proposed transmission line routes (Figure 3.4.1). The largest of these areas is Pinto Wash, located a short distance south of the IV Substation. The dominant species in this area is smoke tree (*Psoralea argophylla*). Other species include velvet mesquite, catclaw acacia, encelia (*Encelia frutescens*), sand verbena (*Abronia villosa* var. *villosa*), and big galleta (*Pleuraphis rigida*). A smaller area of the desert dry wash woodland occurs just south of State Route 98, where two ephemeral streambeds converge and where a dam and culvert have been constructed. Small species such as sand verbena, chinchweed (*Pectis papposa*), paper flower (*Psilotrophe cooperi*) and white dalea (*Psoralea emoryi*), are present in this area. The third area supporting a desert wash community occurs in the southernmost portion of the proposed routes. This small area has become established in an ephemeral streambed and contains a stand of tamarisk (an introduced invasive shrub also known as saltcedar; *Tamarix* spp.) amid a few native shrubs and a single ironwood tree.

### 3.4.1.2 Terrestrial Wildlife

The Sonoran creosote bush scrub and desert dry wash woodland provide cover, foraging, and breeding habitat for a variety of native desert wildlife species. Both the desert iguana (*Dipsosaurus dorsalis*) and flat-tailed horned lizard (*Phrynosoma mcallii*), a BLM sensitive species, have been observed within the proposed transmission line routes. Other common reptile species known in the region and expected to occur within the proposed routes include the long-tailed brush lizard (*Urosaurus graciosus*), side-blotched lizard (*Uta stansburiana*), long-nose leopard lizard (*Gambelia wislizenii*), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), coachwhip (*Masticophis flagellum*), sidewinder (*Crotalus cerastes*), western patch-nosed snake (*Salvadora hexalepis*), western shovelnosed snake (*Chionactis occipitalis*), and spotted leaf-nosed snake (*Phyllorhynchus decurtatus*) (Loeffler 2001).

Eleven species of birds were observed during surveys within the proposed transmission line routes (Loeffler 2001). Commonly observed species included yellow-rumped warbler (*Dendroica coronata*) and white-crowned sparrow (*Zonotrichia leucophrys*). Two wintering species, blue-gray gnatcatcher (*Poliophtila caerulea*) and rock wren (*Salpinctes obsoletus obsoletus*), potentially breed within the area. Raptors observed during the surveys included red-tailed hawk (*Buteo jamaicensis*) and prairie falcon (*Falco mexicanus*). In addition, a western burrowing owl (*Speotyto cunicularia hypugaea*), a BLM sensitive species, was observed within one of the small desert washes south of State Route 98 (Section 3.4.4.17).

A variety of mammal species utilize the Sonoran creosote bush scrub and desert dry wash plant communities for cover and as foraging areas. Desert black-tailed jackrabbit (*Lepus californicus deserticola*), cottontail rabbit (*Sylvilagus audubonii*), round-tailed ground squirrel (*Spermophilus tereticaudus tereticaudus*), coyote (*Canis latrans*), and desert kit fox (*Vulpes macrotis*) are present within the proposed transmission line routes and the two alternative routes, either on the basis of observations involving individuals, scat, or burrows. Other species that commonly occur in the region and that are expected to occur within the vicinity of the proposed and alternative transmission line routes include badger (*Taxidea taxus*), bobcat (*Lynx rufus*), and raccoon (*Procyon lotor*). Mule deer (*Odocoileus hemionus*) and mountain lion (*Felis concolor*) are occasionally observed within the region and could also occur along the proposed and alternative transmission line routes (Loeffler 2001).

### 3.4.1.3 Aquatic Biota

The proposed transmission line routes and the two alternative routes would pass through desert areas where no permanent aquatic habitats are present. The desert washes within the vicinity of the proposed routes contain standing water only following rare rainfall events, and are dry during most the year. As a consequence, there are no aquatic biota within the vicinity of the proposed and alternative transmission line routes.

### 3.4.2 New River Corridor

Relatively few surveys of ecological resources have been conducted within the New River corridor. The information presented here for vegetation and terrestrial wildlife is primarily based on surveys conducted during 2002 (BOR 2002). These surveys focused on 26 sites distributed along the U.S. portion of the New River from near the U.S.-Mexico border to the Salton Sea. While these were not highly detailed quantitative surveys, they do provide useful information about the habitats and biota that occur along the New River corridor.

#### 3.4.2.1 Vegetation Communities

The riparian (shoreline) vegetation along the length of the New River from the U.S.-Mexico border to the Salton Sea primarily consists of four different vegetation community types: tamarisk series, iodine bush series, mixed saltbush series, and common reed series (BOR 2002). In addition, agricultural fields are immediately adjacent to the New River in some areas. The identified riparian communities are generally evident as bands of vegetated thickets that are denser and taller than the adjacent desert scrub habitats found outside of the more flood-prone areas immediately along the river shoreline. During a 2002 survey of 26 sites along the New River, it was found that tamarisk, iodine bush (*Allenrolfia occidentalis*), saltbush, common reed (*Phragmites australis*), and mesquite were the dominant plant species in the New River riparian zone (BOR 2002). A long narrow delta has formed where the New River enters the Salton Sea. This delta, which is within the Sonny Bono Salton Sea National Wildlife Refuge, supports a narrow strip of riparian vegetation that consists primarily of mature tamarisk and common reed (BOR 2002).

Two constructed wetland areas have been developed adjacent to the New River as part of a pilot project examining the feasibility of using constructed wetlands to improve water quality in the New River. The southernmost of these wetlands, known as the Imperial wetland (Figure 3.2-1), withdraws water from the Rice Drain. After water passes through the wetland area, it is discharged into the New River. The northern wetland area, known as the Brawley wetland, withdraws water directly from the New River near Brawley, California (Figure 3.2-1) by pump. As with the Imperial wetland, water is discharged into the New River after passing through the wetland area. Plant species in these two wetland areas include bulrushes (*Scirpus* spp.), broadleaf cattail (*Typha latifolia*), umbrella flatsedge (*Cyperus eragrostis*), and littlebeak spikerush (*Eleocharis rostellata*), in addition to other wetland species (BOR 2002).

#### 3.4.2.2 Terrestrial Wildlife

The dense riparian vegetation associated with the New River provides habitat for a variety of bird and mammal species and often supports high densities of game species such as desert cottontail (*Sylvilagus audubonii*), Gambel's quail (*Lophortyx gambeli*), and mourning dove (*Zenaida macroura*) (Brown 1994). BOR (2002) reported that 36 species of wildlife, including 29 bird species, were observed during surveys conducted along the New River in 2002. Bird species associated with the riparian zone included cliff swallow (*Petrochelidon*

*pyrrhonota*), great-tailed grackle (*Quiscalus mexicanus*), red-winged blackbird (*Agelaius phoeniceus*), and black phoebe (*Sayornis nigricans*). In addition, a variety of shorebirds and waterfowl utilize the New River corridor and the constructed Imperial and Brawley wetlands, including great blue heron (*Ardea herodias*), green-backed heron (*Butorides striatus*), American coot (*Fulica americana*), and mallard (*Anas platyrhynchos*). Amphibians and reptiles observed during surveys included bullfrog (*Rana catesbeiana*), long-tailed brush lizard (*Urosaurus graciosus*), and several unidentified species of turtles. Mammals observed in the vicinity of the riparian zone included California ground squirrel (*Spermophilus beecheyi*), muskrat (*Ondatra zibethicus*), and striped skunk (*Mephitis mephitis*) (BOR 2002).

### 3.4.2.3 Aquatic Biota

As described in Section 3.2.1.1, the channel of the New River was largely formed between 1905 and 1907 as a result of a breach in the Imperial Canal. Prior to this, the New River was normally a dry channel. Consequently, aquatic organisms have been able to become established in the New River only since the early 1900s. The establishment of biological communities in the New River has been greatly affected by the introduction of treated and untreated wastewater, industrial discharge, and agricultural runoff. However, there is relatively little information about the current status of aquatic organisms in the New River.

Setmire (1984) reported that phytoplankton (primarily drifting algae) in the New River between Calexico and the Salton Sea were mainly pollution-tolerant species. In addition, the concentrations and number of types of phytoplankton were highest near the U.S.-Mexico border and decreased as the river flowed toward the Salton Sea. Setmire attributed this decrease primarily to increasing turbidity as the New River flowed toward the Salton Sea and received additional sediment from agricultural runoff.

Setmire (1984) also examined benthic invertebrates (animals that lack a backbone and inhabit the bottom of streams and other aquatic habitats) in the New River. Invertebrates collected from the river included aquatic worms and larval forms of midges. Few species and a very low number of individual organisms were found in samples collected from the river at the U.S.-Mexico border at Calexico and 8.5 mi (13.7 km) downstream. A greater number of individuals and greater species diversity were found in samples obtained at sample stations located 36 and 61 mi (58 and 98 km) from the U.S.-Mexico border. On the basis of species diversity and the numbers and types of organisms collected, Setmire (1984) concluded that the water quality at Calexico and at the station located 8.5 mi (13.7 km) downstream was of such poor quality that very little animal life could exist. However, while the presence of particular invertebrate species indicated that pollution stress was still occurring at locations farther downstream, water quality improved and became more suitable for supporting invertebrate communities as the water flowed downstream toward the Salton Sea.

No quantitative information exists about the distribution and abundance of fish species in the New River. However, the Colorado River Basin Regional Water Quality Control Board has collected fish from the New River since 1978 for analysis of chemical concentrations in tissues as part of the Toxic Substance Monitoring Program. The DOI conducted other studies of contaminants in fish from the New River in 1987 through 1988 (Setmire et al. 1990) and 1988 through 1990 (Schroeder et al. 1993; Setmire et al. 1993). Fish species identified during these studies are listed in Table 3.4-1. Some of these species, such as redbelly tilapia and longjaw mudsucker, are most likely to occur near the downstream end of the New River near the Salton Sea where water quality is better. Other species (e.g., mosquitofish, common carp, and yellow bullhead) that are relatively tolerant of poor water quality and are known to occur in many of the agricultural drainages that enter the New River, may occur along a substantial portion of the New River itself.

**TABLE 3.4-1 Fish Species in the New River**

Common Name	Scientific Name
Channel catfish	<i>Ictalurus punctatus</i>
Common carp	<i>Cyprinus carpio</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Longjaw mudsucker	<i>Gillichthys mirabilis</i>
Mosquitofish	<i>Gambusia affinis</i>
Redbelly tilapia	<i>Tilapia zilli</i>
Sailfin molly	<i>Poecilia latipinna</i>
Tilapia	<i>Tilapia sp.</i>
Yellow bullhead	<i>Ameiurus natalis</i>

Sources: Setmire et al. (1990, 1993);  
Schroeder et al. (1993).

### 3.4.3 Salton Sea

#### 3.4.3.1 Vegetation Communities

Vegetation is generally sparse along the shoreline of the Salton Sea and consists primarily of plants adapted to habitats with limited water. The principal terrestrial vegetation communities in areas without perennial supplies of water (e.g., springs, rivers, or irrigation ditches) are various subcategories of Sonoran desert scrub, including Sonoran creosote bush scrub (as described previously for the proposed transmission line routes), Sonoran desert mixed scrub, and Sonoran mixed and woody succulent scrub. Irrigated agricultural land constitutes a large component of the vegetated areas surrounding the southern end of the Salton Sea where the New River flows into the Sea, although riparian vegetation is present in the vicinity of the New River and Alamo River deltas (Salton Sea Authority and BOR 2000).

A considerable amount of managed saltwater, brackish, and freshwater marsh habitat is present along the southern shoreline of the Salton Sea. Typical vegetation in brackish and salt-marsh habitats includes salt grass (*Distichlis spicata*), alkali bulrush (*Scirpus maritimus*), cattail, common reed, and giant bulrush (*Scirpus californicus*). Freshwater marshes are typically present as scattered stands that are dominated by common reed, cattail, golden dock (*Rumex maritimus*), and rabbitfoot grass (*Polypogon monspeliensis*) (Brown 1994; Salton Sea Authority and BOR 2000). The Sonny Bono Salton Sea National Wildlife Refuge, situated along the Salton Sea in the vicinity of the New River and Alamo River deltas, manages approximately 35,000 acres (14,164 ha) of brackish and salt-marsh habitats and 2,000 acres (809 ha) of

freshwater marsh and pasture, in order to provide habitat for migratory birds and waterfowl (USFWS 2003a). In many locations, the edges of the Salton Sea's open water areas are surrounded by large expanses of unvegetated mudflats that serve as feeding areas for some bird species.

### 3.4.3.2 Terrestrial Wildlife

The Sonoran desert scrub habitats surrounding the Salton Sea contain fauna similar to that described for the proposed transmission line routes above. However, the salt-marsh, freshwater marsh, and mudflat habitats of the Salton Sea provide important nesting, refuge, and feeding areas for a wide variety of birds and waterfowl that do not utilize drier desert habitats. More than 400 bird species have been reported from the Salton Sea and, on average, more than 1.5 million birds are supported annually (Salton Sea Authority and BOR 2000). This includes a number of special status bird species, including Federal- and State-listed threatened and endangered species. Special status species are discussed in Section 3.4.4.

Because the Salton Sea lies within a basin that extends southward to the Gulf of California and has mountainous barriers on the western, northern, and eastern sides, it commonly attracts seabirds, shorebirds, and waterfowl that are normally associated with coastal environments (Patten et al. 2003). Examples of such species include brant (*Branta bernicla nigricans*), scoters (*Melanitta* spp.), ruddy turnstone (*Arenaria interpres interpres*), red knot (*Calidris canutus*), California brown pelican (*Pelicanus occidentalis californicus*), and yellow-footed gull (*Larus livens*). Even species that are considered to be open ocean species, such as Laysan albatross (*Phoebastria immutabilis*) and shearwaters (*Puffinis* spp.), are occasionally observed at the Salton Sea (Patten et al. 2003).

The heaviest use of the Salton Sea by birds occurs in the vicinity of areas with freshwater inflow to the Sea. This includes the area surrounding the mouth of the Whitewater River at the northern end, on the eastern side of the Sea near the mouth of Salt Creek, and at the southern end of the Sea near the mouths of the Alamo and New Rivers (Salton Sea Authority and BOR 2000). More than 375 species of birds have been observed at the Sonny Bono Salton Sea National Wildlife Refuge at the southern end of the Sea. Up to 30,000 snow (*Chen caerulescens caerulescens*), Ross (*Chen rossii*), and Canada geese (*Branta canadensis*), and up to 60,000 ducks (mostly ruddy ducks and eared grebes) use the refuge daily during winter months (Krantz 2002; USFWS 2003b). Marsh birds and shorebirds account for more than 6,000,000 use-days each year (USFWS 2003b). Federal-listed species, such as the bald eagle (*Haliaeetus leucocephalus*) and California brown pelican, have been observed, and there is a population of Yuma clapper rail (*Rallus longirostris yumanensis*) that nests at the refuge. The State-listed peregrine falcon (*Falco peregrinus anatum*) has also been observed. Section 3.4.4 contains a discussion of listed species.

The primary sources of food for birds using the Salton Sea are fish and aquatic invertebrates. However aquatic plants, terrestrial invertebrates, amphibians, and reptiles along shorelines and in the adjacent wetlands and agricultural drainage systems also provide significant sources of food for many species. Some bird species, such as cattle egret (*Bubulcus ibis ibis*),

geese, and white-faced ibis (*Plegadis chihi*), roost at the Salton Sea but obtain food largely from adjacent agricultural fields and natural habitats (Salton Sea Authority and U.S. BOR 2000).

### 3.4.3.3 Aquatic Biota

Aquatic habitats at the Salton Sea are associated with freshwater marsh, salt marsh, open water, and mudflats. This section describes the aquatic habitats and the aquatic biota in the Salton Sea, including phytoplankton, aquatic invertebrates, and fish. In addition, the history and current status of Salton Sea sport fishery are presented.

Although the Salton Sea aquatic ecosystem can be characterized as having a relatively low number of species, it has a high rate of productivity that is capable of supporting a large number of individuals of the species that do occur. This productivity results from the high input of nutrients via irrigation drain water. High nutrient levels, together with warm water temperatures and a high level of solar energy input from the sun, encourage rapid production of phytoplankton and benthic algae, which, in turn, supports a high rate of production of the small aquatic organisms that feed on them, such as zooplankton (small animals suspended in the water column) and benthic worms. These small organisms provide a rich food source for fish and birds. However, at times, the decomposition of algal blooms that result from excess nutrients can reduce dissolved oxygen in some areas of the Sea to levels that result in mortality of fish and other aquatic organisms. Such conditions have been implicated in periodic fish kills in some areas.

The zooplankton community of the Salton Sea primarily consists of ciliates, rotifers, copepods, brine shrimp (*Artemia franciscana*), and the larvae of barnacles (*Balanus amphitrite*), pileworms (*Neanthes succinea*), and fish (Salton Sea Authority and BOR 2000). Adult barnacles form mats that line some shoreline areas, and adult pileworms dominate the benthic invertebrate community. Pileworms are especially important in processing detritus and are prominent in nearly all of the food chains of the Salton Sea. Consequently, the loss of pileworms in the Salton Sea would likely affect the survival of multiple other species.

As described in Section 3.2, the current Salton Sea was formed as a result of floods in 1905 through 1907 that broke through irrigation headworks intended to divert water from the Colorado River into the Imperial Valley. Although the initial fish fauna in the newly formed Salton Sea reflected the freshwater species typically found in the Colorado River and in irrigation drainages, these species were unable to survive, as evaporation of water over the years led to increased salinity. Beginning in the 1950s, the California Department of Fish and Game introduced more than 30 species of marine fish into the Salton Sea from the Gulf of California (Walker et al. 1961). Of these, only the orangemouth corvina (*Cynoscion xanthulus*), bairdiella (*Bairdiella icistia*), and sargo (*Anisotremus davidsoni*) became established. Two species of tilapia (Mozambique tilapia [*Oreochromis mossambicus*] and Zill's tilapia [*Tilapia zillii*]) became established in the Salton Sea after being accidentally introduced in 1964 through 1965. Tilapia are nonnative fish species from Africa that escaped to the Salton Sea from an aquaculture operation and from irrigation ditches where they had been stocked (Riedel et al. 2003). Together, orangemouth corvina, croaker, sargo, and tilapia form the basis of the fishery in the Salton Sea.

Orangemouth corvina is a native of the Gulf of California, and although it only constitutes about 3% of the catch, it is currently considered the primary game fish in the Salton Sea (Riedel et al. 2003). Although young orangemouth corvina feed mostly on zooplankton, pileworms, and other invertebrates, adults are piscivorous (fish-eating) and serve a valuable ecological role as the top aquatic predator. They grow rapidly in the conditions present in the Salton Sea, reaching an average size of approximately 28 in. (70 cm) by 3 years of age (Riedel et al. 2003). Although sampling suggested there was a significant decline in the presence of both egg and larval stages of orangemouth corvina between 1987 and 1989 (Matsui et al. 1991), studies conducted in 1999 and 2000 suggested that more recent stocks of orangemouth corvina might be in better condition than the stocks of previous decades (Riedel et al. 2003).

Bairdiella (also known as Gulf croaker) is native to the Gulf of California and can tolerate salinities ranging from freshwater up to at least 45,000 mg/L (Riedel et al. 2003). The bairdiella population in the Salton Sea was established through stocking of 67 individuals in 1950 and 1951 by the California Department of Fish and Game (Walker et al. 1961), and it is currently the second-most abundant fish in the Sea. Although they are not a substantial part of the fishery in the Salton Sea, bairdiella is occasionally caught by anglers (Riedel et al. 2003). Bairdiella is a small fish that grows to about 10 in. (25 cm) in length. Early young feed primarily on zooplankton and fish eggs, while larger individuals feed primarily on pileworms (Quast 1961). Bairdiella serves as an important forage fish for orangemouth corvina. Riedel et al. (2003) reported that the bairdiella population in 1999 was consistently larger than that reported in an earlier study (Whitney 1961).

Sargo is a schooling fish species that is found from southern Baja California to the northern Gulf of California. Relatively little information is available about the life history of this species in the Salton Sea. Sargo are typically associated with the Sea bottom and feed on benthic organisms such as pileworms and barnacles. Sargo also serve as food for corvina. The sargo reaches an average size of about 10 in. (25 cm) at around 2 years of age (Riedel et al. 2003). Although sargo were once considered a popular game fish, they are currently not abundant in the Salton Sea. It is unclear, however, whether the population is declining (Riedel et al. 2003).

Tilapia can tolerate a wide range of salinity levels, and after salinity in the Salton Sea exceeded 35,000 mg/L in the 1970s, tilapia became the dominant fish species. The actual species composition of the tilapia present in the Salton Sea is unclear, and it is believed that the current stock represents hybrids among three different species — Mozambique tilapia, Zill's tilapia, and Wami River tilapia (*Oreochromis urolepis hornorum*) (Riedel et al. 2003). Tilapia grow to be approximately 16 in. (40 cm) in length and feed on plankton, insects, larval fishes, benthic invertebrates, and plant material. Tilapia currently serve as the most important prey item for orangemouth corvina and fish-eating birds (e.g., pelicans), and also as a popular recreational fish. Although tilapia have a very high salinity tolerance, water temperatures below about 59°F (15°C) have been shown to greatly reduce survival (Riedel et al. 2003). As a consequence, large numbers of tilapia periodically die at the Salton Sea during periods of unusually cold weather.

Although not important from a commercial or recreational fishery perspective, several other fish species occur in the Salton Sea. These species include the sailfin molly (*Poecilia latipinna*), longjaw mudsucker (*Gillichthys mirabilis*), mosquitofish (*Gambusia affinis affinis*),

and desert pupfish (*Cyprinodon macularius*). The desert pupfish, which is the only native species in the Salton Sea, is listed as endangered by both the State of California and the Federal government. Additional information about the desert pupfish is provided in Section 3.4.4.

The sailfin molly is a small fish that is popular with tropical fish hobbyists. It is believed to have escaped into the Salton Sea from tropical fish farms in the 1960s (Salton Sea Authority and BOR 2000). The sailfin molly can tolerate a wide range of salinities, and adults can reportedly withstand salinities as great as 80,000 mg/L (Salton Sea Authority and BOR 2000). In the vicinity of the Salton Sea, it is usually found in freshwater and saltwater marshes and in irrigation ditches. It feeds primarily on plants and small invertebrates, including insect larvae.

The longjaw mudsucker is a small fish that has a native distribution from central California to the Gulf of California. It was introduced into the Salton Sea in 1930 and is mostly found nearshore around cover and in quiet water. It can tolerate very high salinities and has been collected in waters with salinities up to 83,000 mg/L (Salton Sea Authority and BOR 2000). The diet of the longjaw mudsucker consists primarily of invertebrates, although adult fish will also occasionally prey upon small desert pupfish and tilapia. Walker et al. (1961) reported that longjaw mudsucker are eaten by orangemouth corvina in some seasons.

Mosquitofish have been widely distributed in California since 1922, when the species was first introduced to control mosquitoes (Kimsey and Fisk 1969). In the Salton Sea, mosquitofish are most commonly found in the vicinity of freshwater inflows; this species can also tolerate brackish water conditions. Although mosquitofish feed primarily on small invertebrates, they will also eat larval fishes. Predation and competition by mosquitofish have been implicated as potential reasons for the decline of the desert pupfish in the vicinity of the Salton Sea.

#### **3.4.4 Special Status Species**

Special status plant and wildlife species are subject to regulations under the authority of Federal and State agencies. Special status species include those species that are listed or being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) (i.e., Federal endangered, threatened, proposed, or candidate species), that are BLM sensitive species, or that are listed as threatened or endangered by the State of California. (In addition, the State of California maintains lists of California Rare Plants, California Special Plants and Animals, and Fully Protected Animals [CDFG 2003]. Some of the species on these California lists are also listed as threatened or endangered at either or both the State and Federal level.)

No plant or animal species listed as threatened or endangered by the USFWS or the California Department of Fish and Game were observed during surveys conducted in the vicinity of the existing transmission line corridor (Loeffler 2001). Two BLM sensitive species, the flat-tailed horned lizard and western burrowing owl, were observed. Federal-listed threatened and endangered species, and their designated or proposed critical habitats, are afforded

protection under the Federal Endangered Species Act. California-listed threatened and endangered species are protected under the State's Endangered Species Act of 1984.

However, the list of Federal- and State-listed threatened and endangered species that could be present within areas potentially affected by the projects (i.e., the proposed transmission line routes, the New River and adjacent riparian areas, and the Salton Sea) was developed through consultation with the USFWS (O'Rourke 2004) and with the California Department of Fish and Game. Appendix E contains copies of consultation letters from the USFWS and the California Department of Fish and Game. California species of special concern that could occur along the proposed or alternative transmission line routes, the New River, or the Salton Sea, are not included in this section. California species listed as threatened or endangered are included in Table 3.4-2.

#### **3.4.4.1 Peirson's Milk-Vetch (*Astragalus magdalenae* var. *peirsonii*)**

Peirson's milk-vetch is listed as endangered under the California Endangered Species Act and threatened under the Federal Endangered Species Act. It is a silvery, short-lived perennial plant that is somewhat broom-like in appearance. A member of the pea and bean family, it can grow to 2.5 ft (0.8 m) tall and is notable among milk-vetches for its greatly reduced leaves. Peirson's milk-vetch produces attractive, small purple flowers, generally in March or April, with 10 to 17 flowers per stalk. It yields inflated fruit similar to yellow-green pea pods with triangular beaks.

Peirson's milk-vetch has the largest seeds of any milk-vetch. Large seeds are an important adaptation in dune plants. While small seeds can readily germinate under several inches of moist sand, they may exhaust their stored food before the seedling can emerge from the sand at such depths and begin producing its own food. Large seeds provide a greater reservoir of stored food and enable seedlings to grow a greater distance before emergence and/or depletion of their stored energy.

Pierson's milk-vetch occurs on well-developed desert dunes. In the United States, the plant is known only from the Algodones Dunes (Imperial Sand Dunes); in nearby Mexico, from a limited area of dunes within the Gran Desierto in the northwestern portion of the State of Sonora. It does not occur in the Yuha Desert in the vicinity of the proposed transmission line routes, along the New River corridor, or in the vicinity of the Salton Sea.

#### **3.4.4.2 Algodones Dunes Sunflower (*Helianthus niveus* ssp. *tephrodes*)**

The Algodones Dunes sunflower is listed as endangered by the State of California. It is a silvery-white, semi-shrubby perennial in the sunflower family (Asteraceae). The Algodones Dunes sunflower has a woody base, large hairy leaves, and reddish-purple centered flowers surrounded with bright yellow rays. It occurs on unstabilized sand dunes and is known only from the Algodones Dunes system of Imperial County. Recreational use of off-highway vehicles has

destroyed a large portion of the vegetation in areas of the Algodones Dunes open to public use, and this is considered to be a major threat to the species (CDFG 2000a). This species does not occur in the vicinity of the proposed transmission line routes or in the vicinity of the New River or the Salton Sea.

#### **3.4.4.3 Desert Pupfish (*Cyprinodon macularis*)**

The desert pupfish is a small (up to 3 in. [8 cm] in length) freshwater fish known to occur in isolated southwestern desert drainage systems, including tributaries to the Salton Sea. The desert pupfish is the only native fish species in the Salton Sea and is listed as endangered by the Federal government and the State of California.

The desert pupfish was abundant along the shore of the Salton Sea through the 1950s (Barlow 1961). Numbers declined during the 1960s, and by 1978, pupfish were noted as scarce and sporadic. Declines are thought to have resulted from the introduction of nonnative fish into the Salton Sea (USFWS 1993; Sutton 1999). Surveys conducted around the Salton Sea indicated that desert pupfish were present in a number of canals and shoreline pools on the southern and eastern margins of the Salton Sea and in small pools in Felipe Creek, Carrizo Wash, and Fish Creek Wash near the Salton Sea (Sutton 1999). Localities also include agricultural drains in the Imperial and Coachella Valleys, shoreline pools around the Salton Sea, the mouth of Salt Creek in Riverside County, lower San Felipe Creek and its associated wetlands in Imperial County, and in artificial refuge ponds (Sutton 1999).

The desert pupfish is an opportunistic feeder whose diet consists of algae, minute organisms associated with detritus, insects, fish eggs, and small crustaceans (USFWS 1993; Sutton 1999). It is not considered an important food for wading birds and other fish in the Salton Sea because of its low numbers (Walker et al. 1961; Barlow 1961).

The desert pupfish has a high tolerance for extreme environmental conditions, including wide ranges of temperature, dissolved oxygen, and salinity. Barlow (1958) reported that adult desert pupfish survived salinity as high as 98,100 mg/L in the laboratory. Although the desert pupfish is extremely hardy in many respects, it prefers quiet water with aquatic vegetation. It cannot tolerate competition or predation and is readily displaced by exotic fishes (USFWS 1993).

Because desert pupfish prefer shallow, slow-moving waters with some vegetation for feeding and spawning habitat, shallow pools in the Salton Sea probably do not provide an optimal habitat. Desert pupfish are not known to occur, nor are they expected to occur, in the New or Alamo Rivers because of the high sediment loads, excessive velocities, and the presence of predators (Sutton 1999).

#### **3.4.4.4 Desert Tortoise (*Gopherus agassizii*)**

The desert tortoise is listed as threatened by both the Federal government and the State of California. It is a medium-sized tortoise with an adult carapace length of about 8 to 14 in. (20 to

36 cm). Males, on average, are larger than females and are distinguished by having a concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and a longer tail. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. A composite of characteristics often is necessary to distinguish the desert tortoise from the other species of gopher tortoises, but its most unique feature is its very large hind feet.

The desert tortoise is widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. In the Salton Trough, desert tortoise occurs near San Geronio Pass and on the alluvial fans of Coachella Valley (USFWS 1994). This widespread and once common species is rapidly decreasing in numbers due to habitat destruction from off-road vehicle use, agriculture, mining, and urban and residential development. Other factors contributing to the overall decline of the desert tortoise include the spread of a fatal respiratory disease and increases in raven populations that prey on juvenile tortoises. Recent data indicate that many local subpopulations have declined precipitously. The appearance of Upper Respiratory Disease Syndrome, not identified in wild tortoises before 1987, may be a contributing factor (USFWS 1994).

Desert tortoise populations are known from many locations throughout the Mojave and Sonoran Deserts of the Southwest. Throughout its geographical range, the desert tortoise typically is found at elevations of 3,500 to 6,000 ft (1,067 to 1,829 m). In Arizona, they have been found as low as 500 ft (152 m) (Mojave Valley, Mojave County) and as high as 5,200 ft (1,585 m) (east slope of the Santa Catalina Mountains, Pima County). Sonoran Desert tortoise shelter sites most often occur on rocky slopes or in washes that dissect the desert scrub. The desert tortoise does not occur in the Imperial Valley, and the nearest known populations to the projects area occur in the Chocolate Mountains to the east.

The desert tortoise requires crumbly, well-drained, sandy soil to construct nesting burrows. They are not found in areas of very cobbly soil or areas with soil types too soft to construct a burrow, or in dry lakes. In the Mojave Desert, the desert tortoise is most often found in association with creosote bush, Joshua tree woodland, and saltbush scrub vegetation communities. The known range for the desert tortoise does not include the desert in the vicinity of the proposed transmission lines, and surveys conducted in the vicinity of the proposed transmission lines did not find indications of use by desert tortoise (Loeffler 2001). Suitable habitat does not occur in the vicinity of the New River or along the southern shorelines of the Salton Sea.

#### **3.4.4.5 Barefoot Gecko (*Coleonyx switaki*)**

The barefoot gecko is a medium-sized lizard, 2 to 3 in. (5 to 8 cm) long, with soft skin, fine, granular scales, and a grey-brown body with various black and white spots and bands. This species is known only from five localities in eastern San Diego County and western Imperial County and is listed by the State of California as threatened. It inhabits rocky, boulder-strewn desert foothills and is usually found in areas of massive rocks and rock outcrops at the heads of canyons. The barefoot gecko is nocturnal and insectivorous and spends most of its life deep in rock crevices and subterranean chambers. Because of its limited distribution and the absence of

suitable habitat, this species is not expected to occur within the vicinity of the proposed transmission line routes, along the New River, or in the vicinity of the Salton Sea.

#### **3.4.4.6 Flat-Tailed Horned Lizard (*Phrynosoma mcallii*)**

The flat-tailed horned lizard is a BLM sensitive species and a California Department of Fish and Game species of special concern (CDFG 2003).

In early 2003 (68 FR 331; January 3, 2003), the USFWS withdrew a proposed rule to list the species as threatened. The USFWS had determined that threats to the species identified in a proposed rule were not as significant as earlier believed, and that the threats to the species and its habitat were not likely to endanger the species in the foreseeable future throughout all or a significant portion of its range.

The distribution of the flat-tailed horned lizard ranges from the Coachella Valley to the head of the Gulf of California and southwestern Arizona. The species typically occurs in areas with fine, sandy soils and sparse desert vegetation. It is also found in areas consisting of mudhills and gravelly flats. The species has declined because of habitat destruction for agriculture and development.

This species was observed during the current surveys and has been observed within the survey corridor during directed surveys conducted by BLM since 1979. In addition, the survey corridor is located within an identified management area, the Yuha Desert Management Area, for the flat-tailed horned lizard (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). Given the homogeneity of the habitat and the fact that the survey corridor is located within a management area, the entire survey corridor is considered to support the species.

#### **3.4.4.7 Bald Eagle (*Haliaeetus leucocephalus*)**

Bald eagles visit the Salton Sea area during annual migrations to forage on fish and other food resources along the shoreline of the sea. Nesting does not occur in the Salton Sea area, but trees in the area provide important habitat for roosting. Although bald eagles may occur within the area, substantial use of the New River or the desert in the vicinity of the proposed transmission line routes is unlikely due to limited foraging opportunities. There is a possibility that bald eagles could occasionally use transmission towers within the transmission line routes as perches.

#### **3.4.4.8 Brown Pelican (*Pelecanus occidentalis*)**

California brown pelican (*Pelecanus occidentalis californicus*) is found primarily in estuarine, marine subtidal, and open waters. Nesting colonies are found on the Channel Islands, the Coronado Islands, and on islands in the Gulf of California. Historically, there was little use of the Salton Sea by brown pelicans, which were first confirmed overwintering at the Sea in 1987.

The Salton Sea currently supports a year-round population of California brown pelicans, sometimes reaching 5,000 birds. The brown pelican nested successfully at the Salton Sea in 1996 (nine young produced) and unsuccessfully attempted to nest in 1997 and 1998 (Patten et al. 2003).

Brown pelicans are plunge divers, often locating fish from the air and diving into the water to catch them. They typically congregate at selected roosting locations that are isolated from human activity. Approximately 1,100 brown pelicans died at the Salton Sea from avian botulism in 1996, the largest die-offs to date of pelicans in the United States (USFWS 2004).

#### **3.4.4.9 California Least Tern (*Sterna antillarum browni*)**

The California least tern usually nests on coastal beaches and estuaries near shallow waters. Nest sites are located on sand or fine gravel (sometimes mixed with shell fragments) in open areas where they have good visibility for long distances to see the approach of predators. This species is a rare spring and summer visitor to the Salton Sea, but apparent increases in sightings over the past decade may indicate that breeding is occurring at the Salton Sea (Patten et al. 2003). In the Salton Sea area, it is most commonly observed on mudflats near the deltas of the New, Alamo, and Whitewater Rivers and may also forage in nearby rivers or ponds areas (Patten et al. 2003). Although the California least tern occurs in the Salton Sea and may occasionally feed in the New River, it is unlikely that this species would nest along the New River because of the absence of suitable nesting areas.

#### **3.4.4.10 Least Bell's Vireo (*Vireo bellii pusillus*)**

The least Bell's vireo occurs in riparian areas along the lower Colorado River. Nesting habitat of the least Bell's vireo typically consists of well-developed overstories and understories and low densities of aquatic and herbaceous cover. Least Bell's vireo occurs accidentally in the Salton Sea and New River area during migration. This low level of use is reflected by only two observations of this species at the Sonny Bono Salton Sea National Wildlife Refuge (Patten et al. 2003).

#### **3.4.4.11 Gila Woodpecker (*Melanerpes uropygialis*)**

In California, Gila woodpeckers are distributed along the lower Colorado River and occur locally near Brawley in the Imperial Valley. This species typically occurs in desert riparian and desert dry wash woodland habitats but also is found in orchard-vineyard and residential habitats. It formerly was common in the Imperial Valley and was recorded as far north as Coachella Valley at the north end of the Salton Sea. The decline of this species may be attributed to the clearing of riparian woodlands and to competition with introduced European starlings for nesting cavities. Gila woodpeckers eat insects, berries, and cactus fruits, and they nest in cavities of saguaro cacti or riparian trees.

#### **3.4.4.12 Yuma Clapper Rail (*Rallus longirostris yumanensis*)**

The Yuma clapper rail is a year-round resident at the Salton Sea and along the lower Colorado River into Mexico (CDFG 1999). Between 1990 and 1999, an average of 365 rails was counted around the Salton Sea, an estimated 40% of the entire U.S. population of this species (Shuford et al. 2000). Yuma clapper rails occur at the south end of the Salton Sea near the New and Alamo River mouths, at the Sonny Bono Salton Sea National Wildlife Refuge, at the Wister Waterfowl Management Area, the Imperial Wildlife Area, and other locations.

The Yuma clapper rail probes in freshwater and saltwater emergent wetlands for aquatic and terrestrial invertebrates and occasionally for small fish. Nests are built in emergent vegetation. The declines in Yuma clapper rail populations have been primarily attributed to loss of marsh habitat (CDFG 1999).

#### **3.4.4.13 Southwestern Willow Flycatcher (*Empidonax traillii extimus*)**

The USFWS listed the southwestern willow flycatcher as endangered in February 1995 because of “extensive loss of riparian breeding habitat, brood parasitism by the brown-headed cowbird (*Molothrus ater*), and lack of adequate protective regulations.” This subspecies was listed as endangered by the California Department of Fish and Game in December 1990. Large numbers of willow flycatcher pass through southern California deserts during spring and fall migration (CDFG 2004). It is difficult to differentiate between the endangered subspecies that breeds in southern California and the nonendangered subspecies (*E. t. brewsteri*) that breeds to the north in the Sierra Nevada and Cascade Mountain ranges. There is a period of overlapping occurrence in southern California riparian habitats for these two very similar looking subspecies during spring and fall migrations. At the Salton Sea, willow flycatcher, of undetermined subspecies status, is a common spring and fall migrant (Patten et al. 2003).

Southwestern willow flycatchers nest in riparian habitat characterized by dense stands of intermediate-sized shrubs or trees, such as willows, usually with an overstory of scattered larger trees, such as cottonwoods (*Populus fremontii*). With the loss of preferred habitat throughout the Southwest, southwestern willow flycatchers have been observed utilizing tamarisk thickets for nesting. Because such tamarisk thickets occur along the length of the New River, it is possible that this species could occasionally nest in the projects area.

#### **3.4.4.14 Bank Swallow (*Riparia riparia*)**

The bank swallow historically was considered locally common in the lowland regions of California. The species today is extirpated from much of its former nesting range, including all known historical locations in southern California. The bank swallow migrates through the Salton Sea area in April and again in September on its way between South America and its remaining nesting areas in northern California.

#### **3.4.4.15 Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)**

The western yellow-billed cuckoo once nested from Mexico to southern British Columbia. In California, remnant populations breed along sections of seven rivers, including the Colorado River in the southern part of the state. The yellow-billed cuckoo suffered from wholesale destruction of riparian habitat in California over the last 100 years. Although the yellow-billed cuckoo has not been seen recently in the Salton Sea area, suitable habitat does exist in some of the upper reaches of streams draining into the Sea, such as the Whitewater River.

#### **3.4.4.16 Elf Owl (*Micrathene whitneyi*)**

The elf owl, considered endangered by the State of California, is the smallest owl in North America. It is approximately 5.5 in. (13.9 cm) long, with a short tail, yellow eyes, a white breast with rust or brown streaks, and plumage spotted with buff and white on a gray or brown base. The elf owl is migratory and only occurs during the breeding season in California, arriving in March and leaving in October. Almost 70% of the records of elf owls in California come from April and May, which is the height of the breeding season (CDFG 2000b).

The elf owl uses cottonwood-willow and mesquite riparian zones along the lower Colorado River. Nesting requires cavities in larger trees with thick walls. Historically, elf owls were recorded at six sites in California. Two of these were near the Colorado River, one about 4 mi (6 km) and the other about 16 mi (26 km) north of Yuma. The other sites were at desert oases west and southwest of Blythe; one was as far from the Colorado River as Joshua Tree National Monument. There are no reports of this species occurring in the vicinity of the proposed transmission line routes or along the shoreline of the New River. A single (presumably) migrating individual was observed near the Salton Sea at Calipatria, California, in September 1995 (Patten et al. 2003).

No elf owls were found during a major survey in 1998 of 51 sites along the Colorado River, and including all of the sites where elf owls had been previously located. Again in 1999, no elf owls were heard during surveys of the major sites where elf owls had been located in 1978 and 1987. The reason for the apparent lack of elf owls in California is unknown, and it is possible that the breeding population has been extirpated from California.

#### **3.4.4.17 Western Burrowing Owl (*Speotyto cunicularia hypugaea*)**

The western burrowing owl is a BLM sensitive species and a California Department of Fish and Game species of special concern (CDFG 2003). This subspecies is known to nest throughout most of California. It is a year-round resident and nests from February through August, with peak nesting activity during April and May. In Imperial County, it can be found in desert scrub, grassland, and agricultural areas, where it digs its own or occupies existing burrows. Urbanization has greatly restricted the extent of suitable habitat for this species. Other

contributions to the decline of this species include the poisoning of prey species and collisions with automobiles.

Burrowing owls are historically known to exist in the general vicinity of the projects area (CDFG 2003). One burrowing owl was observed on a sandy bank above the desert wash located in the center of the survey corridor. There is a potential for this species to nest and winter within the survey corridor.

#### **3.4.4.18 Peninsular Bighorn Sheep (*Ovis canadensis*)**

Peninsular bighorn sheep inhabit dry, rocky, low-elevation desert slopes, canyons, and washes from the San Jacinto and Santa Rosa Mountains near Palm Springs, California, south into Baja California, Mexico. These sheep are known as low-elevation bighorn because they use habitat from a 400- to 4,000-ft (122- to 1,219-m) elevation. Peninsular bighorn sheep eat primarily grasses, shrubs, and forbs. Within the United States, peninsular bighorn are distributed in a metapopulation structure (a group of subpopulations linked by the movement of a limited number of animals) comprised of at least eight subpopulations. In the 1970s, peninsular bighorn sheep were estimated to number nearly 1,200 in the United States and 4,500 to 7,800 in Baja California. Helicopter surveys conducted in the fall of 2002 indicated that approximately 500 peninsular bighorn inhabit the United States. The most recent surveys of Mexico estimate the Baja California Peninsular bighorn population at 2,000 to 2,500.

Principal reasons for the current low population numbers and the endangered status of the peninsular bighorn sheep include (1) disease from domestic cattle; (2) insufficient lamb recruitment; (3) habitat loss, degradation, and fragmentation by urban and commercial development; and (4) predation coinciding with low population numbers.

Typical habitat for the Peninsular bighorn sheep is primarily located to the west of the project area. As a consequence, this species is not expected to occur within the vicinity of the proposed transmission line routes, along the New River, or along the southern edges of the Salton Sea.

#### **3.4.4.19 Palm Springs Ground Squirrel (*Spermophilus tereticaudus chlorus*)**

The Palm Springs ground squirrel is a subspecies of the round-tailed ground squirrel that occurs in the Coachella Valley associated with sandy substrates. The current and historical distribution for the Palm Springs ground squirrel is from San Geronio Pass to the vicinity of the Salton Sea. It has not been reported to occur in areas surrounding the southern Salton Sea or the Yuha Desert, and suitable habitat does not occur along the New River.

The Palm Springs ground squirrel is typically associated with sand fields and dune formations, although it does not require active blow sand areas. This small ground squirrel seems to prefer areas where sand accumulates at the base of large shrubs that provide burrow sites and

adequate cover. They may also be found in areas where sandy substrates occur in creosote bush scrub and desert saltbush, or desert sink scrub that supports herbaceous growth.

### 3.5 CULTURAL RESOURCES

Cultural resources include archaeological sites and historic structures and features that are protected under the NHPA. Cultural resources also include traditional cultural properties that are important to a community's practices and beliefs and that are necessary to maintain a community's cultural identity. Cultural resources that meet the eligibility criteria for listing on the *National Register of Historic Places* (NRHP) are considered "significant" resources and must be taken into consideration during the planning of Federal projects. Federal agencies also are required to consider the effects of their actions on sites, areas, and other resources (e.g., plants) that are of religious significance to Native Americans, as established under the American Indian Religious Freedom Act (P.L. 95-341). Native American graves and burial grounds, including human remains, sacred and funerary objects, and objects of cultural patrimony, are protected by the Native American Graves Protection and Repatriation Act (P.L. 101-601).

#### 3.5.1 Background

Human settlement in the Colorado Desert region extends back roughly 10,000 years. While a considerable amount of information has been collected for the Baja Peninsula Region, more archaeological research has taken place on coastal areas rather than inland areas because of the higher density of development on the coast. Evidence of past activities in the projects area is primarily associated with Lake Cahuilla, which was formed by the periodic overflowing of the Colorado River into the Salton Basin (Figure 3.1-1). The lake would form every 100 to 150 years (Redlands Institute 2002). Most archaeological sites in the region are associated with this lake.

##### 3.5.1.1 Prehistoric Period

The oldest evidence for people in the Baja Peninsula Region is associated with the San Dieguito Complex (10,000 B.C.–5,000 B.C.). People from this culture appear to have lived primarily along the coast, although some sites have been found inland. Artifacts attributed to this culture include large stone tools that are only worked on one side (unifacial worked stone), stones where flakes were removed in a single direction (unidirectional flake cores), and massive bifacial tools. Tools were made from numerous types of stone. People from this culture appear to have relied on hunting for their main food supply, stopping in any location for short periods of time only (Berryman and Cheever 2001a).

The Pinto Complex (5,000 B.C.–1,500 B.C.) represents a transition to a more refined way of life. This time period is characterized by an expansion into locations away from the coast and a growing reliance on vegetation for food; however, hunting still supplied a major portion of the diet. Artifacts associated with the Pinto Complex include well-made projectile points, knives and scrapers, and grinding stones. The projectile points are large and likely were used on spears